

worse than useless unless race and age are taken into account.



FIG. 1.—*Anopheles* larvæ in several stages of their escape from the ova.

Two well-executed full-page diagrams by Messrs. Ross and Fielding-Ould illustrate the life-history of the

Nigeria of the Liverpool School of Tropical Medicine. The latter contains many good illustrations of the characteristics of the country and of the development of *Anopheles*. Two of these are here reproduced, one (Fig. 1) showing *Anopheles* as ovum and larva, the other (Fig. 2) a breeding-ground of *Anopheles*.

A portrait and short obituary notice of the late Dr. Myers and an illustration of the Kanthack Medal in Pathology also appear in this volume. All the papers are valuable contributions to the science of medicine, and we shall look forward with interest to the publication of future volumes.

R. T. H.

NOTES.

THE Cape papers, says the *Times*, report the formation at Cape Town of a "South African Association for the Advancement of Science," to work as far as possible on the lines of the British Association. In July last a meeting was held to establish a congress of engineers, when an influential committee was appointed. The proposal gradually widened until at length it was found feasible to establish a local "British Association," and a meeting for that purpose, held under the chairmanship of Sir David Gill, F.R.S., the Astronomer Royal at the Cape Observatory, was largely attended, and the formation of the Association having been decided upon by formal vote, the title was discussed, "South African" being carried by 31 votes against 19 for "African."

A REUTER telegram of October 14 from Cape Town states that the *Discovery* sailed that day from Simon's Bay for Lyttelton, New Zealand.

THE resignation of Dr. John Young, professor of natural history and lecturer in geology in the University of Glasgow, is announced. Dr. Young, who was appointed in 1866 to the professorship he now vacates, will retain his connection with the Hunterian Museum, of which he has for a number of years been curator.

PROF. JOHN JOLY, F.R.S., has, subject to the approval of the Lord Lieutenant, been co-opted to fill the vacancy on the Irish Lights Board caused by the death of Mr. J. Pim.

MR. J. R. JACKSON, who for a period of forty-three years has been associated with the Royal Gardens, Kew, has resigned the keepership of the Museum of Economic Botany, and is succeeded by Mr. J. M. Hillier, whose place, in turn, has



FIG. 2.—Portion of a cultivated area at Lokoja, showing butts and furrows, in the latter of which *Anopheles* puddles occur

parasites of malaria, while the last half of the volume is occupied with the Report of the Malaria Expedition to

been taken by Mr. J. H. Holland, late of the botanic station at Old Calabar.

THE death is announced in the Allahabad *Pioneer Mail* of Dr. Vonkraft, of the Geological Survey of India, who was appointed to India by the Secretary of State and has, since January, 1899, been mainly employed in the Himalayas.

THE fiftieth scientific anniversary of M. Berthelot (he began his career as a chemist in 1851) is to be commemorated, says the *Chemist and Druggist*, by the presentation to him next month of a metal plaque by his colleagues of the Institute of France. On the front of the plate, which is the work of Chaplin, the engraver, the recipient's portrait will be reproduced in profile, and on the back M. Berthelot will be portrayed seated at his laboratory table, "Truth" illuminating him with a torch, and "Patrie" protecting him under a flag and offering him a crown of laurels.

THE first Egyptian Medical Congress will be held in Cairo, under the presidency of Dr. Ibrahim Pacha Hassan, from December 10 to 14 next.

AN Industrial and Art Exhibition will be held at Düsseldorf next year, and already the intending exhibitors number about 2300. The exhibition will embrace the following groups:—mines and saltworks; smelting works; the metal industry; machinery and electrical engineering; transport; chemical industry; articles of food, &c., and apparatus for preparing them; stone, earthenware, porcelain, cement and glassware; the wood and furniture industries, house decoration, &c.; fancy goods and small wares; the textile industry; clothing trades; leather, indiarubber and asbestos goods; the paper trade; the printing trade; scientific instruments; building and engineering; education; hygiene and benevolent institutions; sport; horticulture; agriculture and forestry; and art. As was the case with the Paris Exhibition of 1900, a large number of international and other congresses will be held at Düsseldorf during the exhibition.

THE general committee of the Photographic Salon will hold an "At Home" at the Dudley Gallery, Egyptian Hall, on Tuesday next, at 8.30 p.m.

THE next meeting of the Institution of Mechanical Engineers will be held to-morrow, the 18th inst., when Prof. Burstall will present the second report to the Gas-Engine Research Committee. At the November meeting of the Institution a paper will be read by Prof. Dalby on the balancing of locomotives.

A REUTER telegram from St. Petersburg states that a letter has been published in the *Turkestanskiya Vedomosti* giving the following information concerning Dr. Sven Hedin, the Swedish traveller, based upon a letter from him, dated July 10. It appears that Dr. Sven Hedin, at the time of the despatch of the letter, was at the foot of the Akka Tagh, in Northern Tibet, and intended to proceed in the direction of Ladak in order to survey accurately the region about the source of the Indus. Next spring he proposes to return to Osh *via* Kashgar. Meanwhile, a caravan of fifteen horses has arrived at Kashgar bringing the results of two years of the traveller's work in the shape of scientific collections, maps, photographs and diaries. Dr. Sven Hedin speaks in the highest terms of his Cossack escort and extols their courage, endurance and resource in critical situations. Up to the time of writing he had been in no way molested by the Chinese.

THE Liverpool School of Tropical Medicine, according to a Reuter telegram, has now completed the necessary arrangements for the despatch of an expedition at once to the Gold Coast, and to the mining districts there. Dr. Charles Balfour Stewart, under whose leadership the expedition will be, leaves for West Africa this month. He first proceeds to Sierra Leone in order to study the methods now being employed there with such success by Dr. Logan Taylor. After leaving Freetown, Dr.

Stewart will go at once to Cape Coast Castle to attack the insanitary conditions there, as the mortality amongst the Europeans in that town is at present most serious. He is to adopt, under Major Ross's general direction, the latest methods known to science for obtaining the end in view, and will employ large gangs of workmen for draining the ground and clearing the houses of broken water vessels and otherwise attacking the breeding-grounds of the mosquitoes. As regards the movements of the expedition, these, to a great extent, will be determined by the Governor, Major Nathan, with whom Major Ross had a personal interview on the Gold Coast two months ago, when the Governor promised the expedition most valuable assistance. The expedition has been rendered possible owing to the generosity of a private individual who desires to remain anonymous. Antimalarial operations will shortly be in full swing in the Gambia, Sierra Leone, the Gold Coast, and Lagos, the operations in the three first named colonies being organised by and under the complete control of the Liverpool School of Tropical Medicine.

It has been decided that the house which Prof. O. C. Marsh bequeathed to Yale University shall in future be known officially as Marsh Hall, and the grounds in connection with it as the Yale Botanical Garden.

THE subject of the Fiske Fund Prize Essay (value 200 dollars) for the year 1902 is, says *Science*, "Serumtherapy in the Light of the most recent Investigations." The secretary of the board of trustees of the Fund, from whom all necessary information may be obtained, is Dr. H. De Wolf, 212, Benefit-street, Providence, R. I., U.S.A.

THE following awards have been made by the Institution of Civil Engineers for papers dealt with in 1900-1901:—A Telford Medal and Premium to R. P. Bolton; a Watt Medal and a Telford Premium to J. E. Dowson; a George Stephenson Medal and a Telford Premium to W. T. C. Beckett; a Manby Premium to E. K. Scott; a Trevithick Premium to T. A. Hearson; a Telford Premium to J. A. W. Peacock. For students' papers the awards are:—A Miller Scholarship (tenable for three years) and the James Forrest Medal to E. V. Clark; Miller Prizes to C. E. Inglis, H. E. Wimperis, J. L. Cridlan, F. K. Peach, G. H. Whigham, F. Taylor, A. C. Walsh and H. O. Jones.

A NUMBER of awards are to be made by the Industrial Society of Mülhausen, in 1902, among which the following may be noted:—A medal of honour and 400-800 marks, according to the value, for a handbook consisting of tables giving the density of the greatest possible number of mineral and organic combinations in crystal form and in saturated cold solutions. The solution-capacity at other temperatures is to be added to the work as a supplement. A silver medal for the synthesis of a product possessing the most important qualities of Senegal gum capable of use in textile industries. A medal of honour and 800 marks for a substance which may be used as a cheaper, substitute for dry egg-albumen in the printing of fabrics. A medal of honour and 800 marks for a colourless blood-albumen which will not become coloured when steamed. A silver medal for a handbook treating of the analysis of the drugs used in calico-printing and in dyeing. A silver medal for an ink which can be used for marking woollen fabrics to be dyed red, brown, or any other dark colour. This ink must remain visible after all the dyeing processes. A silver medal for a practical process of removing spots of mineral-fat from fabrics. A silver medal for a treatise on the preparation of hydrogen peroxide, and its application for bleaching textile fabrics. For these prizes foreigners are allowed to compete. All drawings, samples, &c. should be marked with a motto and sent before February 15,

1902, accompanied by a sealed envelope containing the name and address of the competitor, to the Präsidenten der Industriellen Gesellschaft, Mülhausen, Alsace.

PRIZES are offered by the English Arboricultural Society for the best essays on the following subjects:—The more extensive cultivation of hardy flowering shrubs; the arboricultural management of private and public parks; an essay on any insect or group of insects injurious to forest trees; the natural regeneration of oak and beech woods; on the management of young trees, with the view of rendering them suitable for planting in avenues, streets and other places; the relative durability of British-grown exotic trees; on the growth and freedom from disease in this country of larches, other than the common European larch; the financial aspect of forestry, with special reference to actual cases. In addition to the foregoing, Mr. H. J. Elwes, F.R.S., offers a special prize for a paper on natural reproduction of trees by seed in England. The next annual meeting of the Society will be held in France.

THE following gentlemen have been nominated to serve on the council of the London Mathematical Society for the ensuing session:—President, Dr. Hobson; vice-presidents, Prof. W. Burnside and Major MacMahon, R.A.; treasurer, Dr. J. Larmor; hon. secs., R. Tucker and Prof. Love; other members, J. E. Campbell, Lieut.-Colonel Cunningham, R.E., Prof. Elliott, Dr. Glaisher, Prof. M. J. M. Hill, H. M. Macdonald, Prof. L. J. Rogers*, A. E. Western, E. T. Whittaker and A. Young*. Those marked * are new nominations. The retiring members are Lord Kelvin and Mr. A. B. Kempe. The annual meeting will be held at 22, Albemarle-street, W., on November 14, at 5.30 o'clock.

EXPERIMENTS have recently been made in the State of Connecticut for the purpose of cultivating the Sumatra tobacco plant. It is stated that the experiments have been very successful, and great interest is now being taken in the matter in order to improve the quality of the Connecticut leaf, which is much used as a wrapper for the better quality cigars.

MAJOR RONALD ROSS informs the *British Medical Journal* that he has recently received a communication from a Jamaica correspondent drawing his attention to the fact that mosquitoes are responsive to certain sounds, such as a continuous whoop or hum. Major Ross's informant states that swarms gather round his head when he makes a continuous whoop. There may be, however, he says, some particular note or pitch that would be more attractive to them.

AT the recent meeting of the American Association, in the Section of Chemistry, Prof. J. H. Long, president of the section, delivered an interesting address on the teaching of chemistry in the medical schools of the United States. The first part of the address was devoted to sketching historically the teaching of chemistry in the American medical schools. A prominent individuality in this connection was Dr. Robert Hare, whose great merit apparently consisted in the ingenuity he displayed in contriving experiments to illustrate simple chemical principles to medical students. While Hare was prominent in Philadelphia, Silliman, Gorham and Mitchell were developing the departments of medical chemistry in Yale, Harvard and Columbia. The next step in the teaching of chemistry to medical students was the institution of laboratory courses; this did not take place at Harvard until 1872. Subsequently to this an important question arose as to the qualification of the teacher of so-called medical chemistry. Since, formerly, the main use of chemistry to the medical student lay in its direct application to pharmacy it was held that this subject was best taught by a physician; the growth,

however, of physiological chemistry, and the obvious relation of chemical principles to physiology and pathology, rendered it of the first importance that medical students should be well grounded, not only in the properties of isolated substances as heretofore, but in the actual principles of organic and inorganic chemistry. A trained chemist alone was competent to teach upon these lines, and hence the medical chemistry taught by the physician became replaced by chemistry taught by a chemist. The remainder of Prof. Long's address dealt with the far-reaching importance of chemistry, inorganic as well as organic, to the medical student, and the inadequacy of mere analytical courses, into which there is apparently some danger of the teaching of chemistry degenerating. He emphasises the fact, well recognised in this country, that the burning problems of the physiology, the pathology and therapeutics, if not of to-day, certainly of the near future, are essentially chemical, and instancing the work of Bredig upon the fermentative action of colloidal platinum, &c., points out that they are by no means necessarily confined within the accepted limits of so-called organic chemistry.

THE Imperial Department of Agriculture for the West Indies maintains its activity in supplying the colonists with the most trustworthy information bearing upon the various subsidiary industries which should, with a little energy and patience, bring about a great improvement in the welfare of the islands. Pamphlet Series, No. 9, now being distributed, deals with "Bee-Keeping in the West Indies." In Europe and America there is a large and ever-increasing demand for honey and beeswax, yet the West Indian islands, with their dozens of varieties of honey-bearing flowers all round the year, may be said, with the exception of Jamaica, to have thus far made no real attempt to regard bee-keeping as worthy of encouragement. Mr. W. K. Morrison, formerly of the United States Department of Agriculture, has been engaged by Dr. Morris as expert adviser to the Imperial Department, and he has been touring amongst the islands during the first half of the present year studying the conditions and prospects of bee-keeping. The outcome of his investigation is this pamphlet of 73 pages, conveying to all who wish to increase their income in an easy manner simple hints and suggestions as to the requirements of tropical bee-keepers. Only a small capital is required to make a good start, and the profits are large so long as a sound and attractive article is produced. It is indicative of the natural carelessness of the colonists that it should be considered necessary to dwell upon this weakness, for in insisting that a high standard of excellence is required to secure remunerative prices on the European markets, it is added that "The great danger to West Indian bee-keeping will probably lie in the tendency to ship abroad honey or wax of an inferior quality." The pamphlet, which is illustrated, is a veritable storehouse of instruction, and should be the means of originating an industry which may add considerably to the wealth of the islands.

PROF. T. LEVI CIVITA, writing in the *Atti dei Lincei*, discusses the law of fluid resistance, and in particular the property that this resistance varies approximately as the square of the velocity, as a consequence of the properties of discontinuous motion in a perfect fluid. The author obtains for the most general case an expression for the resistance in the form of a series of even powers of the velocity, which series is convergent for velocities below a certain limit, and in the cases commonly occurring in practice reduces approximately to its first term, giving Newton's law.

IN a recent *Bulletin* of the Agricultural College at Tokyo there is an investigation by Mr. Aso on the causes of the difference in colour between green and black tea. In making green tea the leaves are steamed as soon as gathered; in the case of black tea the leaves are allowed to ferment before drying. The

finished black tea contains much less tannin than the green. The author shows that the original tea-leaf contains an oxidising enzyme, which is destroyed by heating to about 77° C. During the fermentation of the leaf in the manufacture of black tea this enzyme oxidises the tannin, giving rise to a brown product.

THE June issue of the *Monthly Weather Review* of the U.S. Weather Bureau has a note stating that an observer at Tillers Ferry, South Carolina, had reported that during a heavy local rain in June there fell hundreds of small fish (cat, perch, trout, &c.), which were afterwards found swimming in the pools between the cotton rows in a field. "It is," says the *Review*, "a well-known fact that in such rains all sorts of foreign objects, whether sticks or stones, frogs or fish, or even débris of destroyed houses and crops, occur occasionally, not only in America, but in Europe and elsewhere. It is very rare that we are able to trace these objects back to their sources, but there can be no reasonable doubt that they were carried up from the ground by violent winds, such as attend thunderstorms and tornadoes."

INTERNATIONAL balloon ascents (both manned and unmanned) were undertaken by several countries on July 4 and August 1. The greatest heights at which records were obtained in July were at Trappes, near Paris, 10,270 metres, temperature -52° C. (on ground 16°·5), and at Chalais Meudon, 10,260 metres, temperature -43° (on ground 16°·7). In August, the greatest heights at which observations were recorded were:—Trappes, 9800 m., temperature -40° (on ground 17° 5); Berlin (July 31), 13,040 m., temperature -48° (on ground 15°·1). Drs. Berson and Suring reached an altitude of 10,300 m., temperature -40°. At Vienna a temperature of -33° was recorded in an unmanned balloon at a height of 10,000 metres.

AN agreement has just been concluded between Marconi's International Marine Communication Co., Ltd., and Lloyd's, by which the latter agree to employ no system of wireless telegraphy other than the "Marconi" for a period of fourteen years. The agreement also provides for the immediate equipment of ten Lloyd's signalling stations, one of which is to be on the Fastnet Rock and two on the Red Sea coast, together with the taking over of some of the existing British stations, of which there are at present eight, that could be rendered serviceable to Lloyd's for mercantile signalling.

THE *Monist* for October contains the translation of a paper by Prof. Ludwig Boltzmann on the necessity of atomic theories in physics. In it the author compares the atomic theory with the second method, which seeks to represent the facts of physics by means of differential equations; the latter method he calls "mathematico-physical phenomenology." The object of the paper is to discuss the advantages arising from the retention of the atomic theory, and its claims to be studied at least in parallel with the phenomenologic method. Even if it should be possible to formulate an all-embracing theory of the world, every feature of which has the same evidence as Fourier's theory of the conduction of heat, Prof. Boltzmann thinks it is still an open question whether such a theory can be more easily reached through atomism or phenomenology. It would even be permissible to assume that several representations of the universe, each possessing the ideal traits, were possible.

A SINGLE bone of the wing, and that imperfect, may nowadays seem but poor material on which to establish a new genus of birds, but Dr. F. A. Lucas (*Proc. U.S. Mus.*, vol. xxiv. No. 1245) appears to be justified in regarding a humerus from the Miocene of Los Angeles, California, as representing a large extinct type of flightless auk. For this the name *Mancalla californiensis* is suggested; it is considered to have equalled the great auk in size, but to have been more nearly allied to the

guillemot. The existence of a flightless member of the group at such a comparatively early epoch is considered remarkable. In the same journal Messrs. Jordan and Snyder continue their review of the fishes of Japan, dealing in No. 1241 with the hypostomid and lophobranchiate types, and in No. 1244 with the gobies, of which no less than twenty-one species are described as new. No. 1242 of the journal in question contains Mr. R. V. Chamberlin's account of myriopods of the Lithobius group, while No. 1243 is devoted to the description of new flies from Southern Africa, by Mr. D. M. Coquillett.

THE development of the typical flies (Muscidæ) forms the subject of an elaborate investigation by Herr W. Noack, the results of which are published in the latest issue of the *Zeitschrift f. Wissenschaft. Zoologie* (vol. lxx. part i.). No less than eight distinct stages in developmental history are recognised. In another article in the same issue Herr J. Schaffer, of Vienna, commences a dissertation on the histology and development of cartilaginous structure, and the various modifications assumed by that substance.

SOME time ago Dr. D. G. Elliot's "Synopsis of North American Mammals" (*Field Museum Publications*) was noticed in our columns. The author has supplemented this with a "list" of the mammals of the same area (*Field Mus.—Zool.* vol. ii. No. 2), which contains a few names omitted from the larger work, together with some published too late for inclusion in the latter, and such emendations as have been found necessary. In the same journal (vol. iii. No. 5) Dr. Elliot describes and figures the reindeer, or caribou, of the Kenai Peninsula, Alaska—the *Rangifer stonei* of Dr. J. Allen—in the course of which he throws doubts on the distinctness of this form, and suggests that the American reindeer have been too much subdivided by recent writers.

IN accordance with a recent decision of the council, the first part has been issued of "Obituary Notices of Fellows of the Royal Society." It contains the biographies of recently deceased Fellows, reprinted from the year books for 1900 and 1901, together with an index to the obituary notices previously published in the Society's *Proceedings*.

IN their new catalogue, Messrs. C. Baker, of High Holborn, announce that they have arranged a series of free demonstrations during the coming session, illustrating the use of apparatus for the illumination of microscopic objects, testing of objectives, micrometry and drawing with the microscope. Another announcement of some interest refers to the microscopic slide-lending department, which has now been placed in the hands of various specialists, who have prepared type-written descriptions of most of the series of objects sent out; these should considerably increase the educational value of the system. Of other items we may cite a new engineering microscope (for examining metals) and a mosquito-collecting outfit (for malarial observations), as illustrating the large variety of apparatus now supplied to meet the requirements of modern specialisation.

HANN'S "Lehrbuch der Meteorologie" (Tauchnitz) is now complete. It consists of 10 Lieferungen instead of 8, as was originally proposed.

A PRACTICAL journal for amateur gardeners has just made its appearance under the title of *Garden Life*. The journal informs horticulturists what to do and how to do it, but it mostly leaves the reasons for the operations out of consideration. We suggest that there is a science as well as an art of horticulture; and that descriptions of simple experiments in the physiology of plants, or studies of plant diseases, might be included in the contents of future numbers.

SOME specimen copies of the *Boletim mensal* of the Observatory of Rio de Janeiro have been forwarded to us by the director. These bulletins contain useful meteorological *résumés* collected from various sources in Brazil for a series of years, and tables of the observations made several times daily at the Observatory. There are also occasional climatological sketches referring to other parts of the world.

THE September issue of *The Scientific Roll* (Bacteria) has reached us, and contains a mass of references to books and papers dealing with bacteriology. An editorial note states that although the list is fuller than any other published, it still has many omissions, and bacteriologists who find in it no mention of their contributions are reminded that the remedy is in their own hands, and are invited to send to the conductor the titles and other particulars of the books and articles they have published, that the same may be noted.

THAT well-produced periodical the *Reliquary and Illustrated Archaeologist* always contains some articles of scientific interest, and the issue for October is no exception to the rule. Mr. John Ward, of the Cardiff Museum, describes the interesting "Five Wells Tumulus" in Derbyshire, and another article of note is that by Mr. W. J. Wintemberg, dealing with "Drills and Drilling Methods of the Canadian Indians." Both papers are suitably illustrated.

THE additions to the Zoological Society's Gardens during the past week include a Tantalus Monkey (*Cercopithecus tantalus*) from Africa, presented by Sergeant T. Golding; a White-throated Capuchin (*Cebus hypoleucus*) from Central America, presented by Mr. C. E. Engelbach; a Kinkajou (*Cercoleptes caudivolvulus*) from South America, presented by Mr. W. B. Hall; a Suricate (*Suricata tetradactyla*) from South Africa, presented by Mrs. Lester; two Indian Crows (*Corvus splendens*) from India, presented by Mr. Boyek; a Macaque Monkey (*Macacus cynomolgus*) from India, a Parry's Kangaroo (*Macropus parryi*, ♀), four Musky Lorikeets (*Glossopsittacus concinnus*), a Turquoise Parrakeet (*Neophema pulchella*) from Australia, deposited; a Gouldian Grass Finch (*Poephila gouldiae*), a Beautiful Grass Finch (*Poephila mirabilis*) from Australia, purchased.

OUR ASTRONOMICAL COLUMN.

THE SPECTROSCOPIC BINARY η PEGASI.—Observations of this interesting spectroscopic binary, discovered by means of the Mills spectrograph in August, 1898, have now extended over more than two complete periods, and Prof. Campbell has recently issued the data obtained from the reduction of the measures. Twenty-nine photographs, extending from 1896 August 27 to 1901 May 9, have been utilised in the determination of the orbit.

Elements of Orbit, η Pegasi.

K	= 14.20 km. \pm 0.13 km.
e	= 0.1548 \pm 0.0106.
ω	= 5° 605 \pm 3° 708.
μ	= 0.007681 rad. \pm 0.000020 rad.
	= 0.44009 \pm 0.00117.
T	= 1898 June 29.7 \pm 8.1 days.
	= 1901 September 25.7.
V_0	= + 4.31 km. \pm 0.10 km.
U	= 818.0 days \pm 2.2 days.
$a \sin i$	= 157,800,000.

A light curve embodying the above is given, from which it is found that the maximum velocity is +20.70 km. per second, and the minimum -7.70 km. per second.

The star has been carefully examined with the 36-inch refractor, but no indication of the companion star is to be seen (*Lick Observatory Bulletin*, No. 5).

NO. 1668, VOL. 64]

THE HAMBURG MEETING OF THE GERMAN ASSOCIATION.

THE seventy-third meeting of the German Association of Naturalists and Medical Men lately held at Hamburg was an unusually successful gathering. It will be remembered that it was the existence of this institution which suggested the foundation of our British Association, the latter being only a few years junior to the former. Though otherwise alike, the two associations nevertheless differ in some important respects, especially in the fact that the German body still unites with its purely scientific work functions performed here by the British Medical Association. Another notable difference lies in the fact that presidential addresses, which form so important a feature with us, are not delivered at the German congress. There are, moreover, no popular lectures of any kind, and it is understood that no one shall attend sectional meetings who is not professionally interested in the matters discussed. A good attendance of men of science is further promoted by the fact that it is the custom of some of the learned societies of Germany to hold their annual meetings in connection with this congress.

The meeting just concluded was formally opened on Monday, September 22, in the great Concerthaus, under the presidency of Prof. Richard Hertwig (Munich). On behalf of the municipality of Hamburg, speeches of welcome were delivered by Prof. Voller, Dr. Hartmann and Prof. von Neumayer, to which the president responded. After these proceedings Prof. Lecher (Prag) delivered an address on the discoveries of Hertz and their subsequent developments, reminding the audience that Hertz was a Hamburg man and that his work was most appropriately taken for the first consideration of the congress. A lecture from Prof. Hoffmeister was to have followed, but illness prevented him from attending. Prof. Boveri (Würzburg) then lectured on the problem of fertilisation, giving a lucid account of the phenomena in a considerable number of organisms, and concluding with an emphatic pronouncement that fertilisation in its essence must not be regarded as the cause of the development of the ovum, but rather as a means whereby certain organisms are enabled to combine in one body the characters of distinct individuals.

The congress then broke up into sections, of which eleven were devoted to the natural sciences and sixteen to medical subjects, physiology being included with the latter. Prof. van't Hoff acted as president of the scientific, and Prof. Naunyn as president of the medical groups respectively. The division of the scientific subjects differs somewhat from that followed with us, the sections being constituted thus:—Mathematics, Physics, Applied Mathematics, Chemistry, Applied Chemistry, Physical Geography, Geography, Geology with Mineralogy, Botany, Zoology, Anthropology. For the consideration of these sections some hundreds of papers were provided.

On Wednesday the congress met in a second general session to hear a group of papers on recent developments of the atomic theory, namely, Prof. Kaufmann (Göttingen), on the development of the conception of electrons; Prof. Geitel (Wolfenbüttel) on the bearing of the theory of gas-ions on the phenomena of atmospheric electricity; Prof. Paul (Tübingen), the significance of the theory of ions in physiological chemistry; Prof. His, jun. (Leipzig), the significance of the theory of ions in clinical medicine. On the following day the medical group combined in a general meeting to receive an address from Prof. Ehrlich, of Frankfurt-a-M., on the protective substances of the blood. Prof. Gruber (Vienna), who was to have lectured on the same subject, was unavoidably absent. On the same morning a joint meeting of the scientific group assembled with Prof. van't Hoff in the chair. The first paper was by Prof. Ostwald (Leipzig) on catalysis, giving an account of his hypothesis, or as he preferred to call it "protothesis," regarding the mode of action of catalysers, accompanied by some beautiful demonstrations. This was followed by a group of papers relating to the present position of the doctrine of organic descent. Prof. de Vries, of Amsterdam, opened with a discourse on the action of mutations and mutation-periods in the origin of species. He gave an account of his lately published experiments with *Oenothera Lamarckiana*, showing how this single species is annually splitting up into some seven constant forms which he regards as distinct species. He proceeded to suggest lines on which an attempt might be made to compute the whole number of mutations which have gone to the formation of an existing species. He was followed by Prof. Koken (Tübingen), on palæontology and the theory of